

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 4237

CSAH NO. 19

OVER THE

BUFFALO RIVER

DISTRICT 4 - CLAY COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 48)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 4237, Piers 1 and 2, were found to be in good condition with no structurally significant defects observed. Since the previous inspection, the transverse cap beam at the upstream end of Pier 2 has been replaced. Also, the undermining along the South Abutment has been covered or has naturally filled-in since the last inspection. A light accumulation of timber debris was observed at the upstream end of Pier 2. Overall, there has been considerable aggradation of channel bottom material throughout the bridge since the last inspection.

INSPECTION FINDINGS:

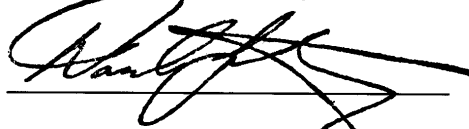
- (A) The undermining of the backwall planking along the South Abutment, which was noted in the last inspection, was covered or has filled-in with soil, and the shoreline, which was along Pier 1, was now armored with a 3 foot strip of riprap up to 1 foot in diameter.
- (B) The heavily deteriorated transverse cap beam at the upstream end of Pier 2, which was noted in the previous inspection, has been replaced with a new timber member.
- (C) A light accumulation of timber debris, with pieces up to 8 inches in diameter, was observed at the upstream end of Pier 2.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 4237

Feature Crossed: The Buffalo River

Feature Carried: CSAH No. 19

Location: District 4 - Clay County

Bridge Description: The bridge structure consists of two timber beam approach spans at each end and the main center span consists of a Pratt Pony Truss. The superstructure is supported by two timber pile breast wall abutments and four timber pile piers. The piers are numbered 1 through 4 starting from the south end of the bridge. No design drawings were provided.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: October 29, 2002

Weather Conditions: Snow/Rain, " 35EF

Underwater Visibility: " 2.5 foot

Waterway Velocity: " 0.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers consist of a single line of piles supporting a timber cap beam. There are four additional piles with timber planking at each end of the Piers 2 and 3 that form a rectangular box that supports the Pratt Pony Truss, which carries the main center span.

Maximum Water Depth at Substructure Inspected: Approximately 4 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the timber curb at the east end of Pier 2.

Water Surface: The waterline was approximately 12.3 feet below reference.
Assumed Waterline Elevation = 87.7.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

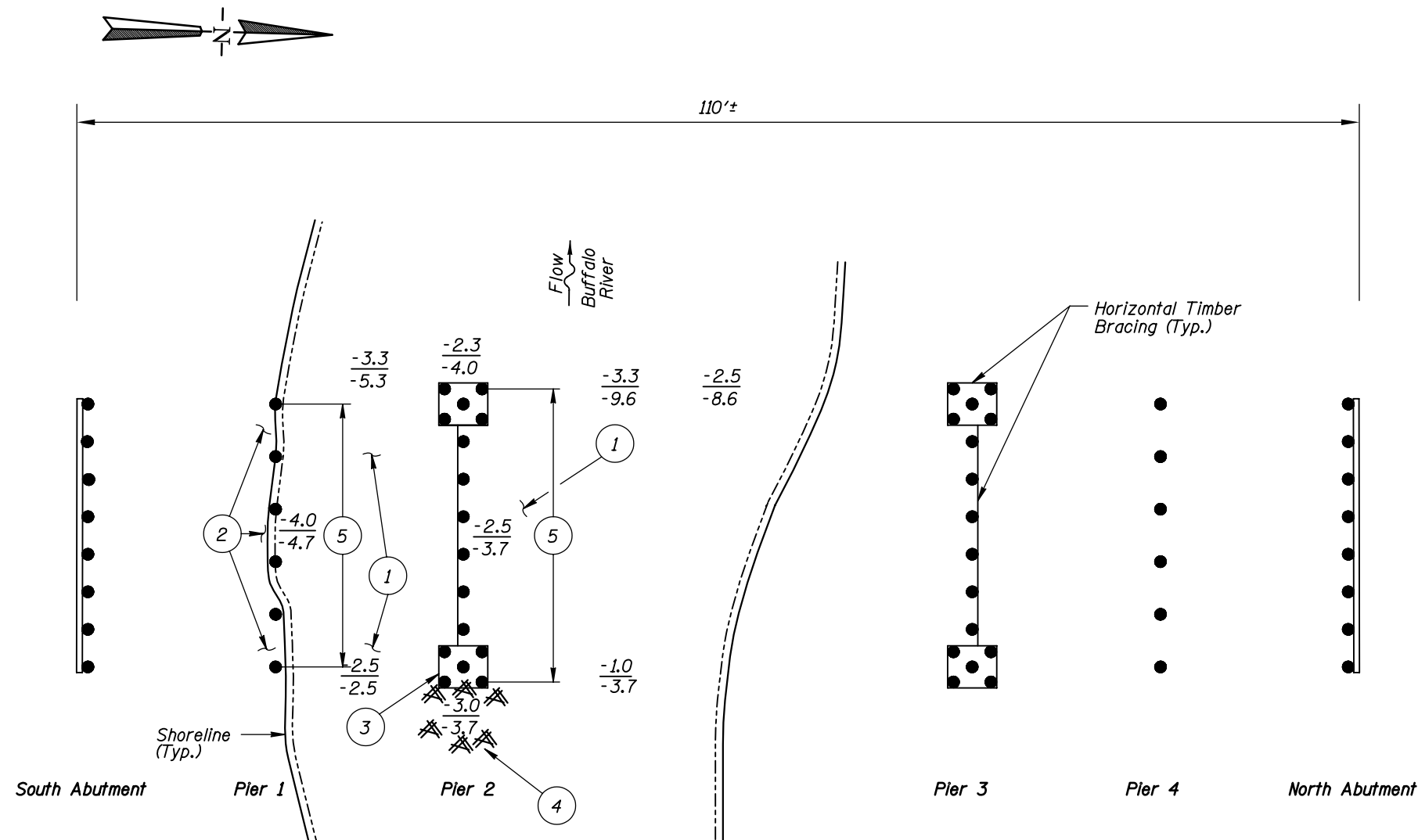
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/02

Item 113: Scour Critical Bridges: Code 1/95

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

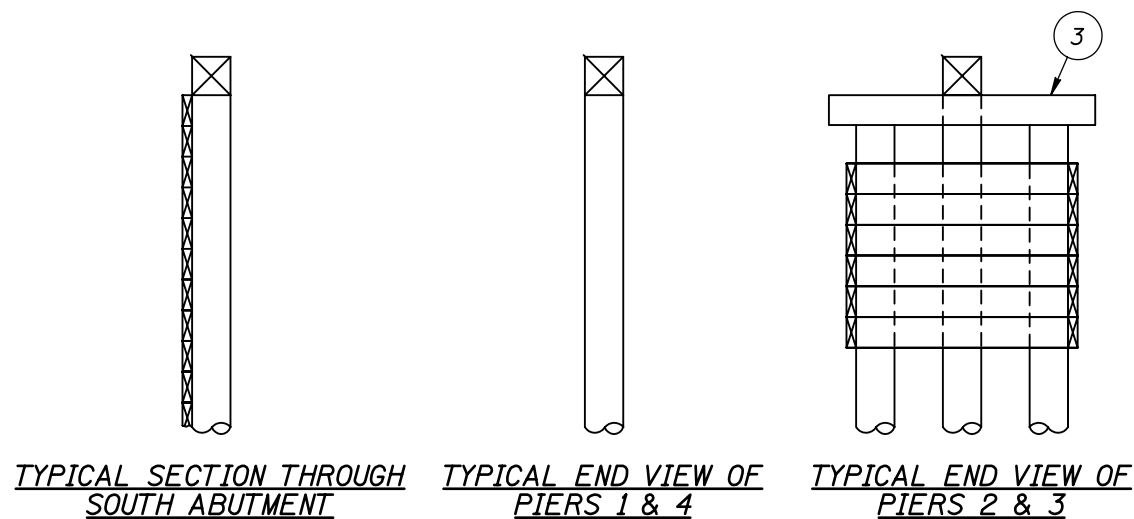


GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 29, 2002, the waterline was located approximately 12.3 feet below the top of the timber curb at the upstream end of Pier 2. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline was 87.7.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- 1 The channel bottom consisted of silt with a maximum probe rod penetration of 1.5 feet.
- 2 The shoreline was armored with a 3 foot strip of riprap up to 1 foot in diameter.
- 3 The transverse cap beam at the upstream end of Pier 2 has been replaced with a new timber beam.
- 4 A light accumulation of timber debris, with pieces up to 8 inches in diameter, was observed at the upstream end of Pier 2.
- 5 Overall, the timber piles were in good condition with no structurally significant defects observed.



Legend

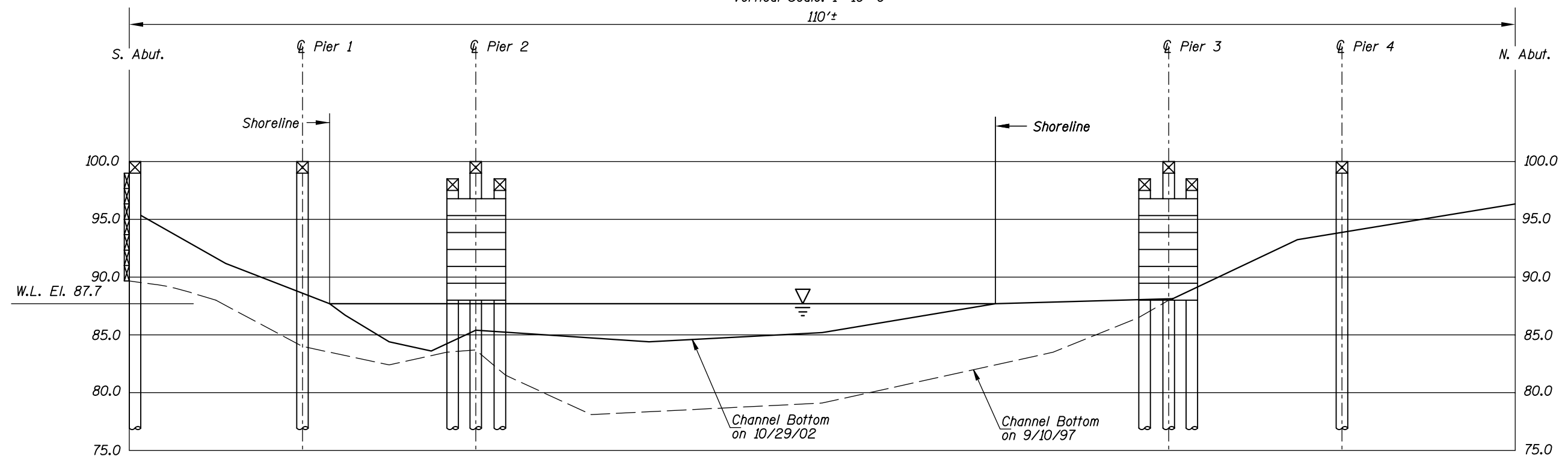
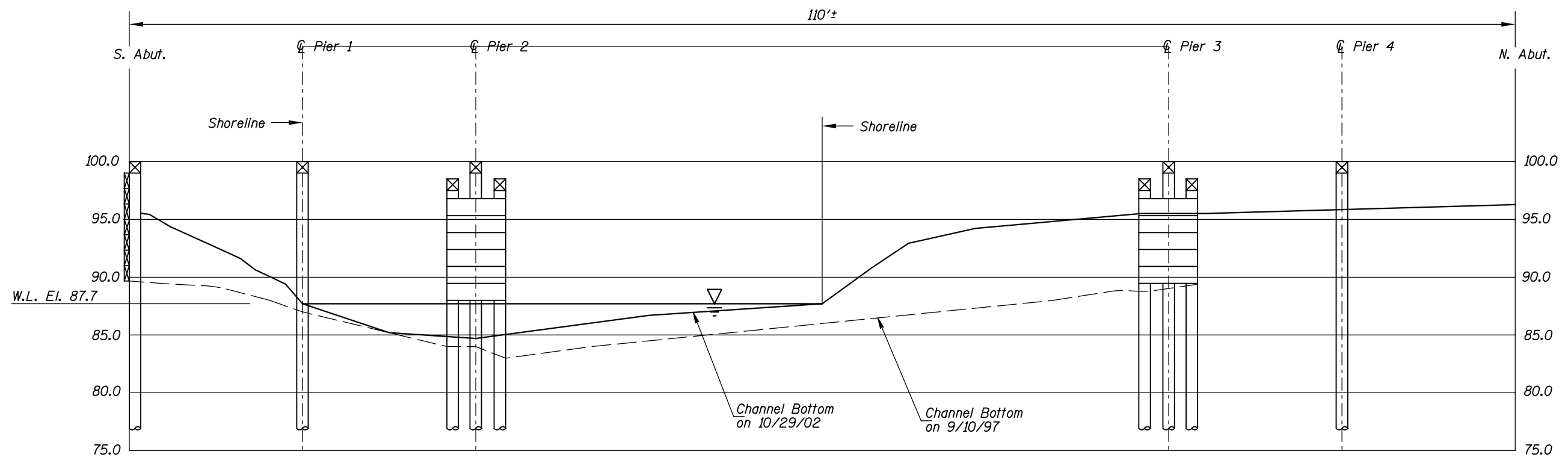
- 2.0 Sounding Depth from Waterline (10/29/02)
- 5.2 Sounding Depth from Waterline (9/10/97)
- Timber Pile
- Timber Debris

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 4237
OVER THE BUFFALO RIVER
DISTRICT 4, CLAY COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35I20048		Figure No.: 1



Note:
Refer to Figure 1 for General Notes.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 4237
OVER THE BUFFALO RIVER
DISTRICT 4, CLAY COUNTY
**UPSTREAM AND DOWNSTREAM
FASCIA PROFILES**

Drawn By: PRH
Checked By: MDK
Code: 35120048

COLLINS ENGINEERS, INC.
300 W. WASHINGTON, STE. 600
CHICAGO, ILLINOIS 60606
(312) 704-9300

Date: OCT. 2002
Scale: NTS (U.O.N.)
Figure No.: 2



Photograph 1. Overall View of the Structure, Looking Southeast.



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking Southeast.



Photograph 4. View of Pier 2, Looking Southwest.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 29, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 4237 WEATHER: Snow/Rain, " 35EF
WATERWAY CROSSED: The Buffalo River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera
TIME IN WATER: 11:50 a.m.
TIME OUT OF WATER: 12:10 p.m.
WATERWAY DATA: VELOCITY " 0.5 f.p.s.
VISIBILITY " 2.5 feet
DEPTH 4 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the timber piles of Piers 1 and 2 were in good condition with no structurally significant defects observed. The transverse cap beam at the upstream end of Pier 2 has been replaced since the previous inspection. Also, the undermining along the South Abutment, noted in the previous inspection, has been covered or has filled in naturally. A light accumulation of timber debris, with pieces up to 8 inches in diameter, was observed at the upstream end of Pier 2.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 4237
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Buffalo River

INSPECTION DATE October 29, 2002
NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (TIMBER PLANKING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	4.0'	7	N	N	8	N	7	8	7	7	N	7	N	N	7	N	7	N
	Pier 2	3.0'	7	N	N	8	7	7	8	N	N	7	7	N	N	7	N	7	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the timber piles of Piers 1 and 2 were in good condition with no structurally significant defects observed. The transverse cap beam at the upstream end of Pier 2 has been replaced since the previous inspection. Also, the undermining along the South Abutment, noted in the previous inspection, has been covered or has filled in naturally. A light accumulation of timber debris, with pieces up to 8 inches in diameter, was observed at the upstream end of Pier 2.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.